Claims:

We claim:

1. A method of killing or inhibiting a microorganism, comprising contacting said microorganism with a composition comprising:

(a) a peroxidase produced by or derived from the fungus *Coprinus*;

(b) an enhancing agent; and

(c) a hydrogen peroxide or a source of hydrogen peroxide.

2. The method of claim 1, wherein the peroxidase is a recombinant enzyme obtainable from *Coprinus cinereus*.

3. The method of claim 1, wherein the peroxidase is obtainable from *Coprinus cinereus*, IFO 8371.

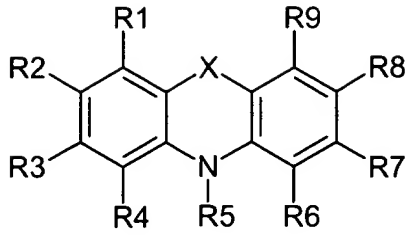
4. The method of claim 1, wherein the source of hydrogen peroxide is an enzymatic hydrogen peroxide-generating system.

5. The method of claim 4, wherein the enzymatic system is selected from the group consisting of glucose oxidase/glucose, hexose oxidase/hexose, L- or D-amino acid oxidase/L- or D-amino acid, and lactate oxidase/lactate.

6. The method of claim 1, wherein the enhancing agent is an electron donor.

7. The method of claim 1, wherein the enhancing agent is a water-soluble halide or thiocyanate salt.

8. The method of claim 1, wherein the enhancing agent is a compound having the formula:



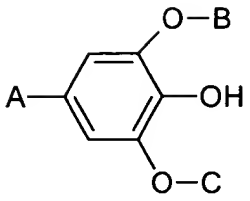
in which formula X represents (-O-) or (-S-), and the substituent groups R^1-R^9, which may be identical or different, independently represents any of the following radicals: hydrogen, halogen, hydroxy, formyl, carboxy, and esters and salts hereof, carbamoyl, sulfo, and esters and salts hereof, sulfamoyl, nitro, amino, phenyl, C_1-C_{14}-alkyl, C_1-C_5-alkoxy, carbonyl-C_1-C_5-alkyl, aryl-C_1-C_5-alkyl; which carbamoyl, sulfamoyl, and amino groups may be unsubstituted or substituted once or twice with a substituent group R^{10}; and which phenyl may be unsubstituted or substituted with one or more substituent groups R^{10}; and which C_1-C_{14}-alkyl, C_1-C_5-alkoxy, carbonyl-C_1-C_5-alkyl, and aryl-C_1-C_5-alkyl groups may be saturated or unsaturated, branched or unbranched, and may be unsubstituted or substituted with one or more substituent groups R^{10};
which substituent group R^{10} represents any of the following radicals: halogen, hydroxy, formyl, carboxy and esters or salts thereof, carbamoyl, sulfo and esters or salts thereof, sulfamoyl, nitro, amino, phenyl, aminoalkyl, piperidino, piperazinyl, pyrrolidin-1-yl, C_1-C_5-alkyl, C_1-C_5-alkoxy; which carbamoyl, sulfamoyl, and amino groups may be unsubstituted or substituted once or twice with hydroxy, C_1-C_5-alkyl, or C_1-C_5-alkoxy; and which phenyl may be substituted with one or more of the following radicals: halogen, hydroxy, amino, formyl, carboxy and esters and salts hereof, carbamoyl, sulfo and esters and

salts hereof, and sulfamoyl; and which C_1-C_5-alkyl, and C_1-C_5-alkoxy groups may be saturated or unsaturated, branched or unbranched, and may be substituted once or twice with any of the following radicals: halogen, hydroxy, amino, formyl, carboxy and esters and salts thereof, carbamoyl, sulfo and esters and salts hereof, and sulfamoyl;

or in which general formula two of the substituent groups R^1-R^9 may together form a group -B-, in which B represents any of the following the groups: (-CHR^{10}-N=N-), (-CH=CH-)$_n$, (-CH=N-)$_n$ or (-N=CR^{10}-NR^{11}-), in which groups n-represents an integer of from 1 to 3, R^{10} is a substituent group as defined above and R^{11} is defined as R^{10}.

9. The method of claim 1, wherein the enhancing agent is selected from the group consisting of 10-methylphenothiazine, phenothiazine-10-propionic acid, N-hydroxysuccinimide phenothiazine-10-propionate, 10-ethyl-phenothiazine-4-carboxylic acid, 10-ethylphenothiazine, 10-propylphenothiazine, 10-isopropylphenothiazine, methyl phenothiazine-10-propionate, 10-phenylphenothiazine, 10-allylphenothiazine, 10-(3-(4-methylpiperazin-1-yl)propyl)phenothiazine, 10-(2-pyrrolidin-1-yl-ethyl)phenothiazine, 2-methoxy-10-methyl-phenothiazine, 1-methoxy-10-methylphenothiazine, 3-methoxy-10-methylphenothiazine, 3,10-dimethylphenothiazine, 3,7,10-trimethylphenothiazine, 10-(2-hydroxyethyl)phenothiazine, 10-(3-hydroxypropyl)phenothiazine, 3-(2-hydroxyethyl)-10-methylphenothiazine, 3-hydroxymethyl-10-methylphenothiazine, 3,7-dibromophenothiazine-10-propionic acid, phenothiazine-10-propionamide, chlorpromazine, 2-chloro-10-methylphenothiazine, 2-acetyl-10-methylphenothiazine, 10-methylphenoxazine, 10-ethyl-phenoxazine, phenoxazine-10-propionic acid, 10-(2-hydroxyethyl)phenoxazine and 4-carboxyphenoxazine-10-propionic acid.

10. The method of claim 1, wherein the enhancing agent is a compound having the formula:



wherein A denotes a group -D, -CH=CH-D, -CH=CH-CH=CH-D, -CH=N-D, -N=N-D, or -N=CH-D; D is selected from the group consisting of -CO-E, $-SO_2$-E, - N-XY, and $-N^+$-XYZ; E is -H, -OH, -R, or -OR, and X and Y and Z may be identical or different and selected from -H and -R; R is C_1-C_{16} alkyl, preferably saturated or unsaturated, branched or unbranched C_1-C_8 alkyl, optionally substituted with a carboxy, sulfo or amino group; and B and C may be the same or different and selected from C_mH_{2m+1}; $1 \leq m \leq 5$.

11. The method of claim 1, wherein the enhancing agent is acetosyringone, methylsyringate, ethylsyringate, propyl-syringate, butylsyringate, hexylsyringate, or octylsyringate.

12. The method of claim 1, wherein the enhancing agent is a salt selected from the group consisting of potassium halide, sodium halide, lithium halide, ammonium halide, calcium halide.

13. The method of claim 1, wherein the enhancing agent is a salt salt selected from the group consisting of potassium iodide, sodium iodide, lithium iodide, ammonium iodide, and calcium iodide.

14. The method of claim 1, wherein the enhancing agent is a salt selected from the group consisting of sodium thiocyanate, potassium thiocyanate, and ammonium thiocyanate

15. The method of claim 1, wherein the microorganism is present in laundry.

16. The method of claim 1, wherein the microorganisn is present on skin, hair, mucous membranes, teeth, wounds, bruises or in the eye or oral cavity, of a human or animal.

17. The method of claim 1, wherein the composition is in the form of a soaking, washing or rinsing liquor.

18. The method of claim 1, wherein the composition is a liquid composition.

19. The method of claim 1, wherein the composition is a mouth wash, an antiinflammatory liquid, a perspirant, a deodorant, or a nasal spray.

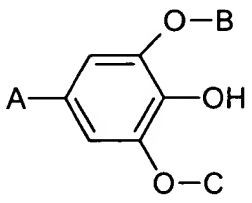
20. The method of claim 1, wherein the composition is a solid composition.

21. The method of claim 1, wherein the composition is an eye ointment, an anti-inflammatory ointment, a foot bath salt, a perspirant, or a deodorant.

22. A method of killing or inhibiting a microorganism, comprising contacting said microorganim with a composition comprising:

(a) a peroxidase;

(b) an enhancing agent of the formula:



wherein A denotes a group -D, -CH=CH-D, -CH=CH-CH=CH-D, -CH=N-D, -N=N-D, or -N=CH-D; D is selected from the group consisting of -CO-E, $-SO_2$-E, -N-XY, and $-N^+$-XYZ; E is -H, -OH, -R, or -OR, and X and Y and Z may be identical or different and selected from -H and -R; R is C_1-C_{16} alkyl, preferably saturated or unsaturated, branched or unbranched C_1-C_8 alkyl, optionally substituted with a carboxy, sulfo or amino group; and B and C may be the same or different and selected from C_mH_{2m+1}; $1 \leq m \leq 5$; and

(c) a hydrogen peroxide or a source of hydrogen peroxide.

23. A method of preserving a cosmetic product, comprising adding to the cosmetic product an effective amount of an enzymatic antimicrobial composition comprising:

(a) a peroxidase produced by or derivable from the fungus *Coprinus;*

(b) an enhancing agent; and

(c) hydrogen peroxide or a source of hydrogen peroxide.

24. The method according to claim 23, wherein the cosmetic product is a liquid, a gel, a paste, an ointment or a lotion.

25. The method according to claim 23, wherein the cosmetic product is a mouth wash, an eye lotion, a perspirant, a deodorant, a nasal spray, an eye ointment, or a foot bath salt.

26. A method for cleaning or disinfecting contact lenses comprising contacting said contact lenses with an effective amount of an a enzymatic antimicrobial composition comprising:

(a) a peroxidase produced by or derivable from the fungus *Coprinus;*

(b) an enhancing agent; and

(c) hydrogen peroxide or a source of hydrogen peroxide.

27. A method of inhibiting microbial growth on a hard surface, wherein the surface is contacted with an a enzymatic antimicrobial composition comprising:

(a) a peroxidase produced by or derivable from the fungus *Coprinus;*

(b) an enhancing agent; and

(c) hydrogen peroxide or a source of hydrogen peroxide.

28. The method according to claim 27, wherein the hard surface is a process equipment member of a cooling tower, a water treatment plant, a dairy, a food processing plant, a chemical process plant or pharmaceutical process plant.

29. The method according to claim 27, wherein the hard surface is a surface of water sanitation equipment.

30. The method according to claim 27, wherein the hard surface is a surface of equipment for paper pulp processing.